REMARKS

Claims 8, 10, 11, 15-24, 26, 30-35, 42, 43, 45-49, 51-56, 58-60, 64-72, 74-91, 93-97 and 99 are now pending in the above-referenced patent application. Applicants respectfully request further consideration of these claims, in view of the amendments set forth above and the following remarks.

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Cancelled Claims

Claims 8, 49, and 98 have been canceled to advance the prosecution of the instant case. Applicants expressly reserve the right to refile the canceled claim, without prejudice, in a continuing application. Applicants' cancellation of this claims should not, in any way, be considered as an admission with respect to any outstanding rejection applying to such claim, and Applicants hereby expressly deny any such interpretation. Likewise, Applicants cancellation of this claim should not, in any way, be considered as a surrender of any subject matter covered by the cancelled claims or any equivalents thereof.

Rejection Under 35 U.S.C. § 102(b) Based on Pohm et al. as evidenced by Maxwell et al. and Kitada et al.

The Office action rejects claims 8, 10, 11, 15-19, 23, 24, 26, 30-33, 42, 43, 45-49, 51-55, 59, 60, 64-72, 74-78, 80, 82, 83, 88-91, 93, 96 and 99 as being anticipated by Pohm et al. ("High-Density Very Efficient Magnetic Film Memory Arrays", IEEE Transactions on Magnetics, 1968, Mag-5, 3, 408-412), as evidenced by Maxwell et al. ("Processing Guidelines for S.M.P.S. Multilayer Ceramic Capacitors", 2005, 1-6) and Kitada et al. ("Reaction Between Permalloy and Several Thin Metal Films", Thin Solid Films, 1984, 122, 173-182).

Applicants respectfully traverse these rejections.

Each of the independent claims requires forming ten or more different inorganic materials on a substrate by a method that includes (i) delivering a first component of the material to the substrate to form a first solid layer comprising the first component on the substrate, (ii) delivering a second component of the material to the substrate to form a second solid layer comprising the second component on the first layer, and (ii) varying the composition, concentration or thickness of the delivered (first or second) component between respective regions.

Applicants have disagreed in the past, and continue to disagree, with the reading of Pohm as detailed in the Office action. In deference to the Examiner's reading, Applicants have deleted the word stoichiometry from the claims and have eliminated the reaction possibility. However, Applicant's reading of the Pohm reference is confirmed and the Examiner's reading of the Pohm reference is incorrect as evidenced by the Declaration of John A. Reed Under 37 C.F.R. §1.132 ("Reed Decl."), an expert with over 40 years of experience in the field of semiconductor memories. Mr. Reed is considered an industry pioneer in the architecture, design, and development of semiconductor memories. As an electronic engineer, he designed, and reviewed and critiqued designs of, SRAMs, DRAMs, ROMs, and EEPROMs. Indeed, Mr. Reed developed the first commercial DRAM for Intel in 1970. (Reed Decl., ¶ 2). Mr. Reed's opinion, after reading the Pohm reference, as well as the Examiner's interpretation of that reference, is that the Examiner is mistaken.

Applicants have modified their arguments in view of Mr. Reed's explanation of the Pohm reference as well as his opinions.

As Mr. Reed explains, the Pohm reference discloses an experiment for exploring a variety of thin film magnetic memory geometries on the same die where a single wafer comprised of a number of these dice can be processed to evaluate different parameters associated with the arrays. Table I defines a range of values Pohm considered to be reasonable for different materials required. To implement the experiment Pohm discloses would require processing a number of wafers using normal masking techniques to define the experimental die in multiple locations on each wafer. In particular Pohm disclosed 4 different pitches for sense digit lines which comprised copper coils that wrap around the die in question, and in the word line direction, Pohm discloses a set of 1 mil lines with 3 mil spacing, another set of 2 mil lines with 4 mil spacing, another set of 3 mil lines with 5 mil spacing, and finally, a set of 4 mil lines with 6 mil spacing. (Reed Decl. ¶ 6)

It is important to note that Pohm's article proposes building a plurality of identically patterned dice, each with the variety of geometries discussed in the prior paragraph, on a single wafer. (See Pohm Figure 1a) Each die of the plurality of dice contained on each processed wafer, would have identical film thickness parameters, at least within the range of normal processing tolerances. Thus, to set film thickness parameters at some certain values and process wafers with techniques available to Pohm in 1969, each die on any given wafer would have

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virtually identical film thickness characteristics; in order to obtain experimental test devices with differing film thickness parameters would require processing separate wafers differently (i.e., by varying deposition times) to obtain the different results. (Reed Decl. ¶ 7)

Furthermore, the table created by the Examiner at pages 3-4 of the Office action of October 12, 2006 is not disclosed by Pohm. As Mr. Reed explains, this table is speculation that Pohm would have had the ability to vary the thicknesses between dice on a single wafer. For example, site number 1 in the Examiner's table has a 1500 angstrom Ni-Fe layer, which would require 50 seconds deposition time, and site number 3 in the Examiner's table has a 1000 angstrom Ni-Fe layer, which would require only 33 seconds of exposure to the sputtering source. But Pohm neither disclosed nor suggested any ability to deposit to only one site, so Pohm's dice all would necessarily have the same thicknesses. Assuming the Examiner's Site 1 and Site 3 were manufactured on the same wafer, and both exposed in a vacuum environment to a sputtering source at the same time, Site 1 and Site 3 would be exposed for the same time. So, after 33 seconds have elapsed to properly deposit the correct 1000 angstrom thickness for Site 3, Site 1 hasn't reached its target, so deposition would perforce be continued for the additional time needed to achieve its required 1500 angstrom thickness. But, by that time, Site 3 would have the same film thickness as Site 1. (Reed Decl. ¶ 8)

Applicants also submit herewith the Declaration of Daniel Giaquinta Under 37 C.F.R. §1.132, an expert in the field of inorganic material array synthesis and testing, who has read the Pohm reference, as well as the Examiner's interpretation of that reference. Dr. Giaquinta also confirms that the Pohm reference does not disclose the elements of the claimed invention.

Pohm does not disclose or suggest preparing arrays of diverse materials using a protocol that includes varying the composition, concentration or thickness of the *delivered* (*e.g.*, first or second) *component, as compared between respective material-containing regions* – a step that is required by each of the claims defining the present invention. Also significantly, Pohm does not deposit components of materials into different regions of a substrate to form different materials, as required by the claims (e.g., claim 42 requires that "each of at least ten of the materials being different from each other"). (Giaquinta Decl. ¶ 7)

For anticipation, "the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art. ... Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed

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knowledge does not grant a license to read into the prior art reference teachings that are not there." Motorola, Inc. v. Interdigital Technology Corp., 43 USPQ2d 1481, 1490 (Fed.Cir. 1997) (emphasis added).

The Office action heads well beyond the disclosure of Pohm, using inherency, to create a disclosure where there is none. Table I of Pohm does not have to disclose a "wide range of amounts" for both first and second layers because it only discloses one thickness for each layer over the entire substrate. Inherency requires more than speculation about the array that Pohm could have made – and there is nothing in the process of Pohm that would lead to the Examiner's conclusion. Indeed, Table I of Pohm does not allow for any layer to be in any order (see p. 409, par. 3 of Pohm). Each layer has been deposited to perform a specific task; if a layer were to be omitted, the goal of demonstrating a "very high density DRO magnetic film memory array" (p. 408, par. 1, ln 5-6) may be unrealized. If a layer is deposited too thinly, for example, the function of the layer may be unfulfilled. If a layer is deposited more thickly, however, the device would still function in the same manner, although perhaps less efficiently. The Cr layer, for example, is a buffer layer between the layer-2 ferromagnet and the glass (p. 409, par. 3, ln 1-2). According to Pohm, the purpose of the Cr layer is to "increase adhesion between the glass substrate and the first permalloy layer and to increase the coercive force of the first permalloy layer." Thus, if Cr were another composition the explicit purpose of the Cr layer deposition may be unattainable. While multiple storage cell structures were prepared (p. 409, par. 2, ln 1), the role of each layer remained the same indicating that any layer order or a random layer order would not be feasible. (see Giaquinta Decl. ¶ 8)

Since the last Office action, the Examiner has changed the rejection, in part, to state the Pohm "unequivocally contains" the compositions of the table spanning pages 3-4 of the Office action (as compared to the old rejection which stated that the array "could contain"). This is not correct, as explained by the two experts who have reviewed the reference and the rejections.

The only difference between the regions of Pohm are the physical size of the regions, which is a result of the different spacings in the word and digit line directions to create "different sized storage cells" (see bottom of second column of page 408 in the sentence that carries over to page 409). This is not a compositional, thickness or concentration difference as required by the claims.

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Hence, the Pohm reference would not have been understood by a skilled artisan as disclosing the inventions defined by the presently-pending claims, which require delivery of a first component to form a first layer in each of the ten or more predefined regions of the substrate, with subsequent delivery of a second component to form a second layer over the first layer in each of the ten or more regions, while varying the composition, concentration, and/or thickness of the delivered components between respective regions for the first and/or the second components. As such, Pohm does not anticipate or suggest the presently-pending claims.

The Applicant respectfully requests that these rejections be withdrawn.

Rejection Under 35 U.S.C. § 103(a) Based on Pohm et al. in view of Howard et al., Makino et al., Lee et al., Brown et al., and Jubb et al. as evidenced by Maxwell et al. and Kitada et al.

The Office action also rejects claims 8, 10, 11, 15-24, 26, 30-35, 42, 43, 45-49, 51-56, 58- 60, 64-72, 74-91, 93, 95, 96, 98 and 99 as being obvious under 35 U.S.C. § 103(a) over Pohm et al. (Pohm et al. "High-Density Very Efficient Magnetic Film Memory Arrays", IEEE Transactions on Magnetics, 1968, Mag-5, 3, 408-412) in view of Howard et al. (Howard, J.K. et al. "Intermetallic Compounds of Al And Transitions Metals: Effect of Electromigration in 1-2-µm-wide lines", J. Appl. Phys. 49(7), 1987, 4083-4093) and Makino et al. (Makino, K. et al. "A Highly Reliable Plated Wire: Study on Corrosion of Magnetic Films", IEEE Transactions on Magnetics, 1973, Mag-9, 3, 500-503), and Lee (Lee, F.S., "A High-Density Coupled-Magnetic-Film Memory Array", IEEE Transactions on Magnetics, 1971, Mag-7, 4, 808-872) and Brown et al. (Brown et al. "High Density Devices Using Permalloy Propagation of Wall-Coded Bubbles", IEEE Transactions on Magnetics, 1979, Mag-15, 6, 1501-1506) and Jubb et al. (Jubb et al., "Coercivity, Structure, and Stoichiometry of Permalloy/Alumina Multilayers", J.Appl. Phys., 1985, 57, 1, 4192-4194) as evidenced by Maxwell et al. (Maxwell, J. et al. "Processing Guidelines for S.M.P.S. Multilayer Ceramic Capacitors", 2005, 1-6) and Kitada et al. (Kitada, M. et al. "Reaction Between Permalloy and Several Thin Metal Films", Thin Solid Films, 1984, 122, 173-182).[1]

[1] The Office action sets forth numerous conclusive statements regarding what Pohm teaches with respect to various claimed aspects of the invention, and /or regarding what Applicants claims mean. Applicants expressly disagree with many of the statements asserted in the Office action in this regard. Some particular points of disagreement are discussed herein, to the extent necessary to distinguish the invention defined by the presently pending claims. Applicants have not, however, specifically addressed

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Applicants respectfully traverse this rejection.

Applicants traverse the rejection based on the above discussion of Pohm. Applicants also traverse this rejection of claims 8, 10, 11, 15-19, 23, 24, 26, 30-33, 42, 43, 45-49, 51-55, 59, 60, 64-72, 74-78, 80, 82, 83, 88-91, 93, 96 and 99 on the basis that this rejection is based on obviousness and not anticipation. The anticipation rejection relies on inherency, at least in part. It is now axiomatic that inherency cannot be relied upon for an obviousness rejection. "Inherency and obviousness are distinct concepts." *W.L. Gore & Associates, Inc.* v. *Garlock, Inc.*, 220 USPQ 303, 314 (Fed. Cir. 1983). This is so because that which is inherent is not necessarily known, and obviousness cannot be based on that which is unknown. *In re Spormann*, 150 USPQ 449, 452 (CCPA 1966).

Specifically, in discussing inherency, the Examiner acknowledges differences between Pohm's explicit disclosure and the claimed invention. Because these features were unknown at the time of the invention, at least according to Pohm's explicit disclosure, the obviousness rejection cannot stand.

"Obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established." *In re Rijckaert*, 9 F.2d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993).

Applicants traverse the rejection of claims 20-22, 34, 35, 56, 58, 69, 81, 84-87, and 95 on the basis that Pohm does not disclose a method for making an array of diverse materials, the method comprising forming ten or more inorganic materials on ten or more predefined discrete regions of a rigid substrate, respectively, each of at least ten of the materials being different from each other and being formed by a method that comprises delivering a first component of the material to the respective predefined discrete region of the substrate to form a first solid layer of the first component on the substrate, delivering a second component of the material to the respective predefined discrete region to form a second solid layer of the second component on the first layer, and varying the composition, concentration or thickness of the delivered first or second components between respective regions, the substrate comprising a sufficient amount of

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other particular points of disagreement, since such points are moot in view of the arguments set forth by Applicants. Applicants are not conceding the factual accuracy of any statements set forth in the Office action, except to the extent expressly admitted by Applicants. Applicants do not admit or acquiesce to statements in the Office action upon which Applicants have not commented.

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space between the ten or more regions such that the delivered components do not substantially interdiffuse between the ten or more regions of the substrate.

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CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Applicants believe that no further fees are required in connection with the instant amendment. If necessary, however, the Examiner is hereby authorized to charge any fees required in connection with this application to Deposit Account No. 50-0496.

Respectfully submitted,

Dated: 4-10-07

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